NEVARC NEWS VK3ANE

Incorporated in Victoria, 2014, Registration Number: A0061589C
The monthly magazine of the
North East Victoria Amateur Radio Club http://nevarc.org.au/
An Affiliated club of Wireless Institute of Australia
An Affiliated club of Radio Amateur Society of Australia Inc.

Volume No: 08 Issue 9 September 2021

Next Meeting
1.00pm
Sunday 12th September
ANNUAL GENERAL MEETING
Online via Zoom video conferencing system
No Meeting at Clubrooms

When Technology goes too far…

NOTICE OF NEVARC ANNUAL GENERAL MEETING

Sunday 12 September 1.00pm

Online via Zoom video conferencing system

The NEVARC Annual General Meeting for NEVARC will be held on 12 September 2021 at 13:00 by “ZOOM” video conferencing system.

Due to the current and expected Covid-19 restrictions it was decided at committee level that the Annual General Meeting should be held using Zoom to allow as many members as possible to attend in a safe environment.

To this end we have created a ZOOM account for the club and ask that all members create (if they don’t already have one) a ZOOM account as soon as possible.

Please advise me if you are unable to use Zoom, so any voting papers can be emailed to you for nominations.

Nomination forms have been emailed out already and some have been received back with nominations for positions.

MINUTES

The Monthly minutes of meetings will now be held on the member’s area of the NEVARC website rather than being emailed to each member.

Hope this find you well and COVID free

FRANK SCOTT VK2BFC – Secretary

Technology defined: "anything that was invented after you were born"

CHURCHES AND CHAPELS ON THE AIR
Saturday, 11 September
10am to 4pm UTC

Saturday 11th 8.00pm ~ Sunday 12th 2.00am
Melbourne Time

The World Asociation of Christian Radio Amateurs and Listeners

WACRAL

Churches and Chapels on the Air is taking place on Saturday, 11 September and most activity will take place on the 80 and 40m bands, SSB, between 10am to 4pm UTC. This is based in the United Kingdom.

If you're intending to put a station on air at a local church or chapel, please ensure permission has been obtained and any COVID rules in force are observed.

Like in most of the Christian Nets on the air during the Churches and Chapels weekend you may often hear the number FIVE ZERO ONE bandied around.
Whilst it's common to hear the amateur greeting of '73' used when ending a QSO, on Christian Amateur Radio Nets, you may also hear '88' which means 'love and kisses'.
Wishing someone 'good health' is '99' and to wish them 'God bless' it's '100'.
A now departed 'ham', often told of a Scottish lad who was dying.
With his last breath he whispered to his friend '141'.

The next time the friend was in church he began to thumb the pages of the hymn book.
On reaching 141 he realised the message his friend was trying to convey to him was the hymn 141, "God be with you 'till we meet again".

Later, a WACRAL [The World Association of Christian Amateurs and Listeners] member added all of these numbers together - they totalled 501 and since that time, 501 has been used in Christian Amateur Radio Nets.

https://www.wacral.org/chota-2021/

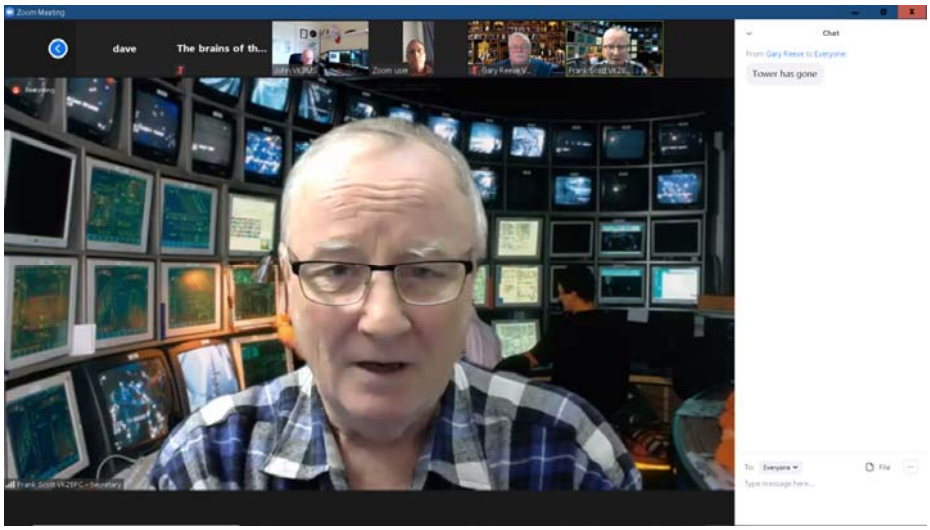
NEVARC CLUB REPEATERS

VK3RWO 70cm has had an upgrade and is now capable of having the latest FT5D radios use the Wires-X system.
A new antenna is now in service and a footprint of roughly 40km radius has been measured for digital.
Remember that the 70cm repeater can be used for Analogue as well just use a 123Hz CTCSS tone

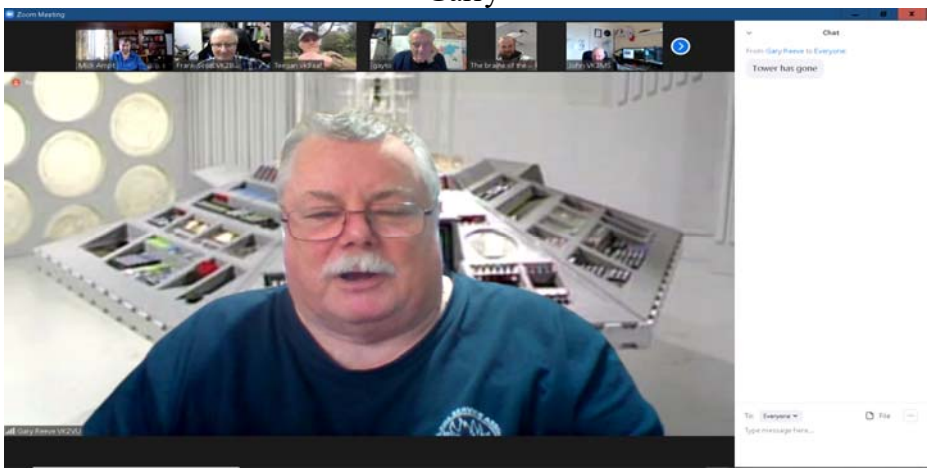
ZOOM MEETING TRIAL

Last NEVARC 8th August general meeting was held using Zoom, due to COVID lockdowns.
For a first attempt all went well with no technical dramas.
This was a test, to be prepared for a NEVARC Zoom AGM on Sunday 12th September starting at 1.00pm.

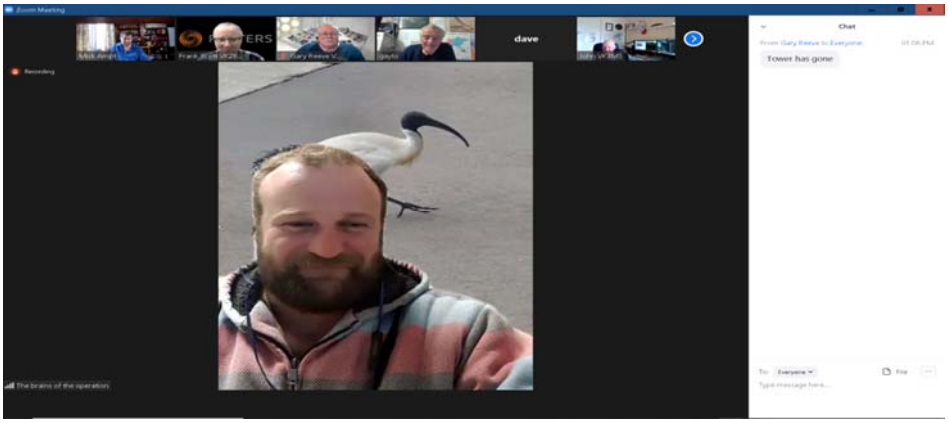
Frank



Garry



Matt



~Mick VK3CH

9th Digital Amateur Radio Television Worldwide QSO Party

On the 15th August 2021 Peter Cossins told the Melbourne ATV Community, “The conversion to HD for VK3RTV was completed. Uplink signals on 1246 MHz, 1255 MHz and 1278 MHz are DVB-S2 with the output on 445.500 MHz DVB-T2, as before, VK3RTV has a two channel multiplexed output.

There are two controllers each with a CHA and CHB input. The 1255MHz and 1278 MHz inputs feed CHA and CHB switched to VK3RTV2 and “Remote Access" and 1246 MHz inputs feed CHA and CHB switched to VK3RTV1.

“Remote Access" is an input from the Internet which is restricted for special purposes. The system still accepts a DVB-S signal to ensure no station is disadvantaged if they are not HD. Signal video is taken from the HDMI outputs of the receivers and is then routed via a HDMI switch and a HDMI Splitter. One output of the Splitter feeds the HDTV Encoder and the other goes to the BATC Streamer.

DVB-T2 is an advanced HD technology not yet implemented by Australian commercial stations.
It is likely that receiving stations will have to re-scan for the signal and remember that no television set or older set top box will decode DVB-T2. Currently the output is on test with a 3 dB lower output power.
Thanks go to the members of the Melbourne ATV Group who funded this extensive project.

Regards Peter”

PREPARING 2021 ATV QSO PARTY PRE-RECORDED VIDEO

After the success of pre-recorded video last year, it was time to do an update.
Last years ATV info session was nearly six an half minutes long, too long for a single ATV session according to Peter Cossins, saying many more stations were expected this year, 2.5 minutes maximum was the goal.
So I worked out I had 10 sessions of things to show and narrate.
Two and half minutes a total of 150 seconds, so that’s an average of 15 seconds over 10 sessions, some longer sessions than others, some sessions shorter.
I typed up a running sheet with what I was going to say, this is better than talking “on the fly”.
A test run was done in the shack, timing how long it took to speak each session.
Then it was time for the real deal, the live recorded production.

TEN SESSIONS TO PUT ON 2021 ATV QSO PARTY

Each ATV session was broken down to;

1. Welcome / Doncaster QTH
2. X7000 VHF/UHF antennas + 6mx Vertical + HF Loop on quarter acre
3. 160mx top loaded Vertical
4. ATV TX/RX beams + 10GHz dishes
5. Outside 2 VHF/UHF radios in enclosures
6. 6 outside cameras and capping and local TX control switch
7. BBQ cam
8. Shack ATV gear
9. Shack radio MF/HF/VHF/UHF/SHF desk equipment
10. ATV shack seat view

I use Movavi Video Suite 2020 to edit the video and sound and post video production, as I did last year.

VIDEO PRODUCTION

As anyone will tell you, what video you see as a finished product takes way more time to produce.

Filming was done during the two week Stage 6 Melbourne COVID-19 Lockdown, so I was happy to have something constructive to do, legally at home, to pass the time.
The biggest hassle seemed to be getting a nice sunny day, then filming was done,
But as I commenced filming the council rocked up and decided to drill holes in the road a few houses away – lots of noise – what are the odds? Anyway, between gaps of works and noise I managed to film everything outside, the noise was not so bad inside the house.

Cutting a video from six minutes to three minutes and still retain most of the information is no mean feat.
Without talking really fast, it's hard.
I culled a lot of words from my practice 'running sheet' several times, that proved the best way to time it, before getting the camera and producing the video.

But in an hour filming was complete and by late afternoon video editing, titling and saving was done.
Three minuets of video took six hours to complete a finished product.
After doing it last year most of the steps were second nature.
The video was a shorter version of the video I presented the year prior.

The software comes with a 170 page PDF manual that I have never read, in true ham radio operator style!

DEAD RARE CAMERA BATTERY

My JVC Everio HD-6 camcorder is 14 years old and the 14 year old battery has long gone south, I used the camera in the shack, operating off the 7.2 volt DC power supply, as my main camera until I recently installed a dome camera. So to shoot video portable a new 7.2 volt battery was required.
I ordered a replacement battery years ago, via EBay from Hong Kong, but what arrived was the wrong item.

A few days ago I found a site https://www.betterbatt.com.au/ that has every battery you can think of.
They even had three different capacity types; I got the biggest, the price difference negligible.
Better Batt are local to Melbourne, the order arrived within days and it was a branded battery that was the proper deal, it was even charged up on arrival.
I highly recommend this site, with reasonable prices.

TESTING BEFORE THE DAY

To avoid unexpected hassles a few days before a practice test was done, but all the hard work years ago still pays off with everything working as per design. All the outside cameras working fine, no weather damage.
But one of the radios was dead, no DC power, the fault was under the house. After a lot of dusty crawling about the cable fault was fixed.

As VK3RTV is now DVB-T2 the television no longer receives VK3RTV in the new mode.
One of the spare new DVB-T2 set top boxes was connected to the outside TV coax feed to monitor the repeater in real time. As the set top box top outputs HDMI any decent sized computer monitor will do now, or any TV with HDMI inputs.

A future project, for watching VK3RTV out on the backyard deck, is housing the set top box outside in a weatherproof box ready for use, this will save setting it up each time.

THE ROSTER PLAN

The plan for Friday night was a quick 'round robin' followed by longer sessions if stations wish.

Friday 27th

7.25 PM	Intro via VK3RTV	
7.30 PM	Melbourne stations	20 mins approx. (Each station a short over)
7.50 PM	Sydney stations	20mins approx. (Each station a short over)
8.10 PM	Whyalla stations	20 mins approx. (Each station a short over)

Then another round of up to 30 mins until everyone had enough time.

VK3RTV Outbound Video Service

YouTube: https://www.youtube.com/channel/UCxPw_E-C0Ddc0FIKdjPnuew

Saturday 28th

Locally here maximum of 10 minute segments in total, may not get to every VK station, depends on participation.

9.30 AM Columbus Ohio

11.30 AM Boulder Colorado

12.30 PM Los Angeles California

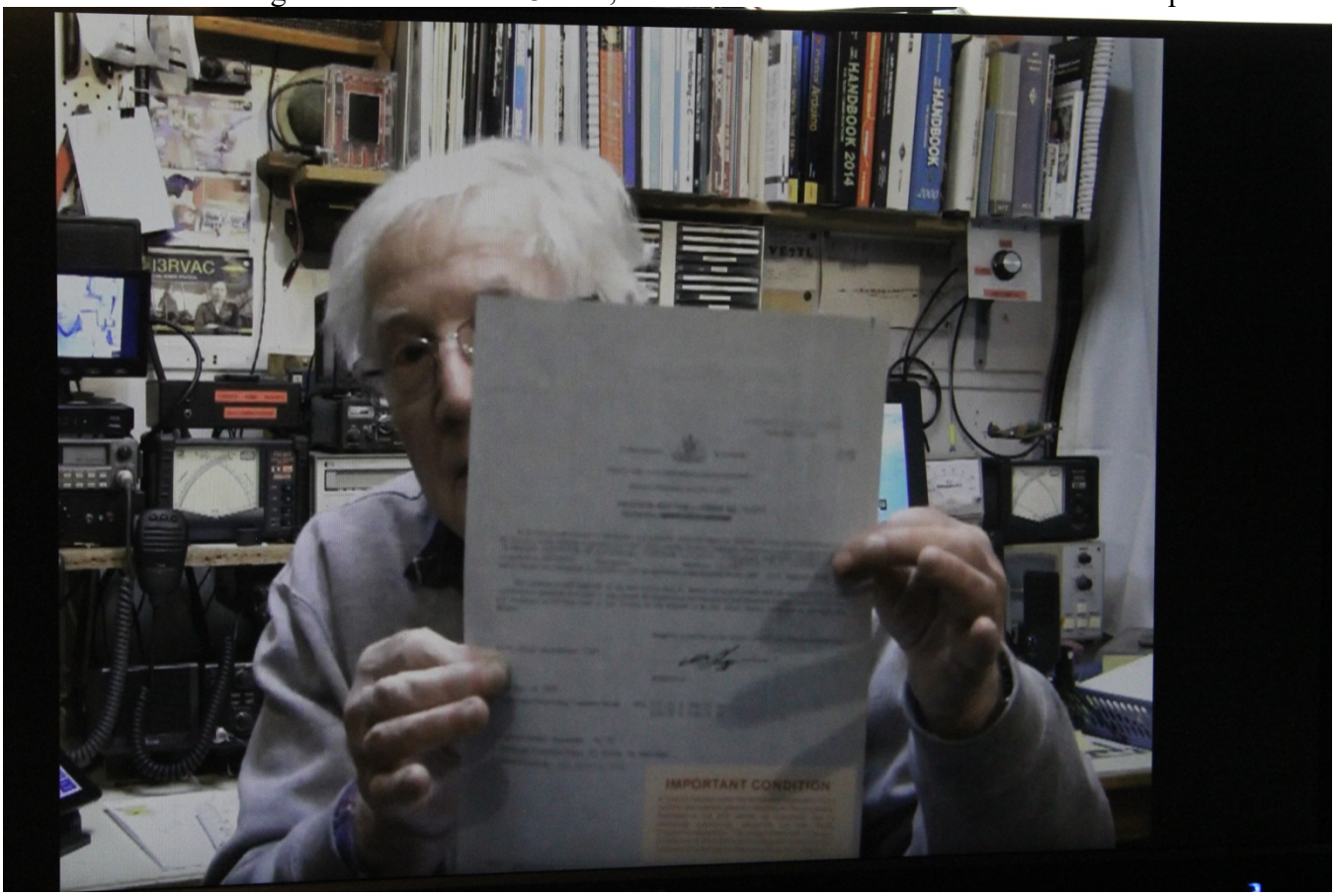
YouTube: https://www.youtube.com/channel/UCxPw_E-C0Ddc0FIKdjPnuew

FRIDAY NIGHT – 27th AUGUST – VK LOCAL STATIONS LINK UP

Both the Friday and Saturday sessions were captured on Ian's VK3QL YouTube streaming service.
You are able to watch the ATV QSO Party online and either watch the lot, or jump to a session of interest.
The link here https://www.youtube.com/channel/UCxPw_E-C0Ddc0FIKdjPnuew

Peter Cossins VK3BFG, Friday night opening address

Peter with the original licence for VK3RTV, from the Postal & Telecommunications Department



The evening started with local VK stations, VK3, VK2 then VK5, for two rounds, finished after 10pm.

Mick VK3CH

Neil VK3BCU

Ian VK3QL

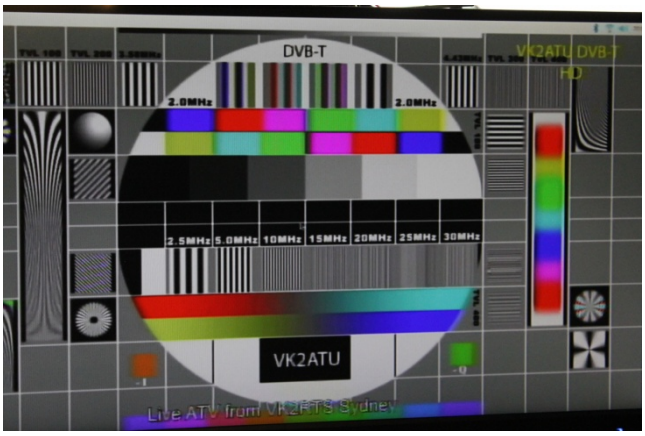
Richard VK3VRS

Geoff VK3GE

Clint VK3CSJ

Gary VK3CRJ

John VK3ATV

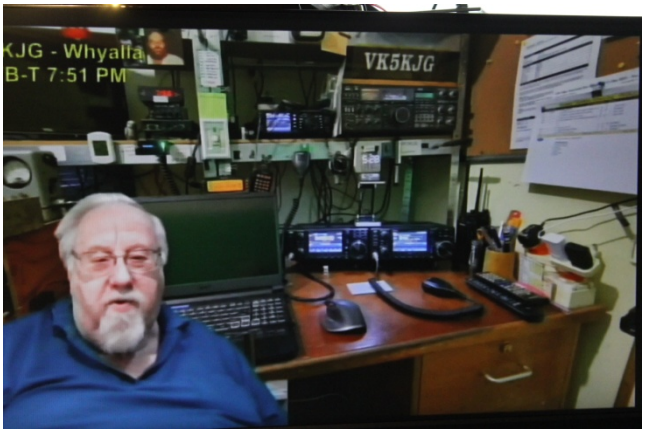


John VK2ATU

John VK2ATU

Paul VK2JPL

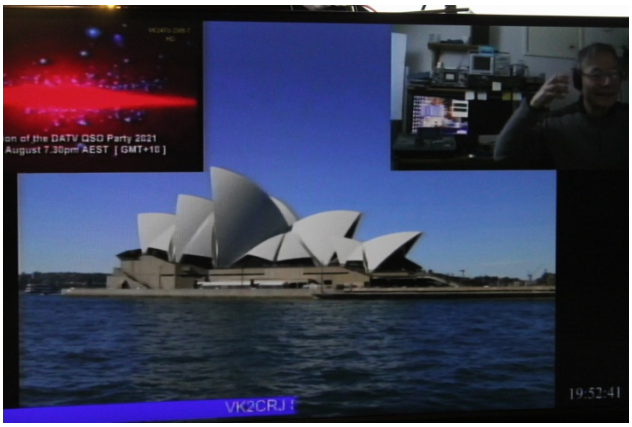
Bevan VK5BD



John VK5KJG

Roger VK5YYY

David VK5DMC



Gary VK2CRJ

SATURDAY – 28th AUGUST – VK LOCAL & INTERNATIONAL STATIONS LINK UP

LINKED AMATEUR RADIO TELEVISION REPEATERS

VK3RTV	MELBOURNE	VICTORIA
VK2RTS	SYDNEY	NEW SOUTH WALES
VK3RMD	PORT PIRIE	SOUTH AUSTRALIA
WR8ATV	COLUMBUS	OHIO USA
WO8TV	BOULDER	COLORADO USA
W6ATN NETWORK	CALIFORNIA	USA

The day started with links to Columbus Ohio, then Boulder Colorado, ending with Los Angeles California.

It was a very interesting and varied view of what the guys in the states get up to with amateur television.
Like VK they had some technical hassles, audio seems to be the problem.
It is easy to forget that they are staying up late to talk to us, but they all seemed very keen to tell their stories.
They are very into microwave television with demonstration videos aplenty.

So many USA stations came up I did not have time to catch all the locations, names or calls.
Unlike VK, not all USA ATV operators have callsign ID up when transmitting, or mentioned really briefly, or they hold up a QSL card. Hopefully this list is accurate and includes everyone that came on.

USA STATIONS

FLORIDA

KH6HTV Jim
K0JOY Ed
K0CJG Chris
N0YE Don
KC6JPG Roland
KC6AV Wolfgang
KB4ICU David

LAS VEGAS

KE6BXT Don
N7ZEV Fran
KA7HQP Dennis
WB9KMO Rod

NORTH CALIFORNIA

K6SOE Jim
WB6ASU FRED
W6ORG TOM
N6GKB KEITH
W6KGE BOB

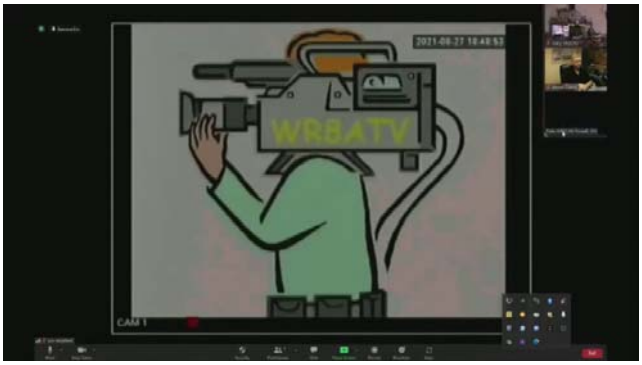
Some screen grabs of Saturday, roughly in order of going to air, so a mix of USA & VK stations…


WR8ATV


WR8ATV


WR8ATV
ATCO
REPEATER


WR8ATV
COLUMBUS
ATCO


WR8ATV


WR8ATV


WB8CJW


VK3ATV


VK3CH Mick Doncaster 05E 147.4 FM

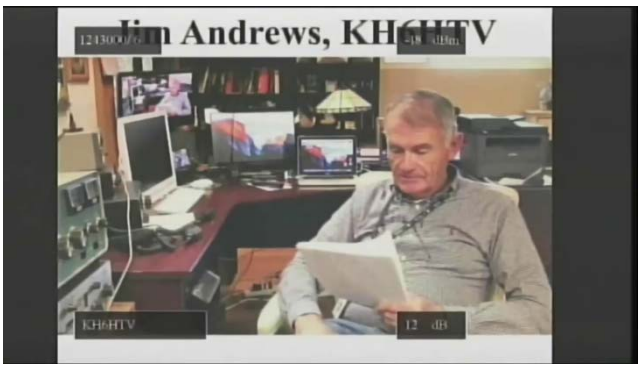

Richard - VK3VRS

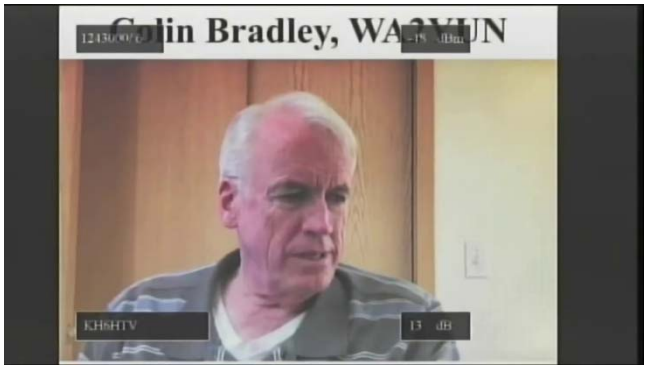

VK3GE
Geoff in Toolern Vale, Victoria, Australia

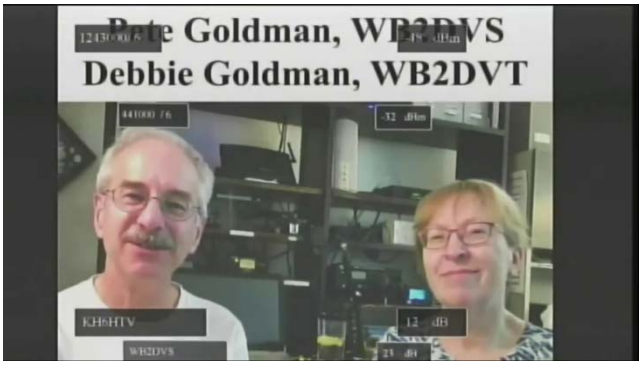

VK3CSJ - Clint
Narre Warren South


KH6HTV


KH6HTV


Jim Andrews, KH6HTV
KH6HTV


Colin Bradley, WA2VUN
KH6HTV


Debbie Goldman, WB2DVT
KH6HTV


Bill Eberle, AB
KH6HTV

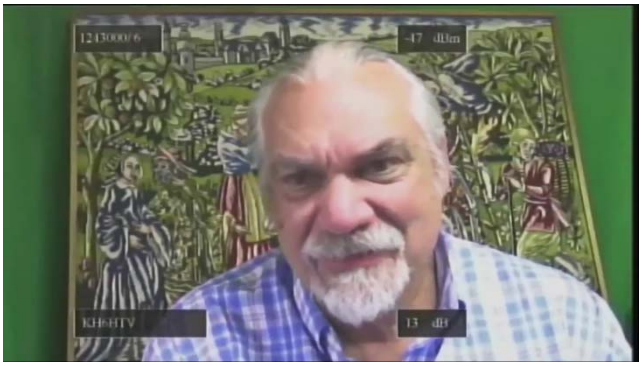

Joe Woods, AD
KH6HTV


Naomi Salaman, KDØPDZ
KH6HTV


Larry Nelson, K
KH6HTV


Ed Joy, KØJQ
KH6HTV


Chris Grund, K
KH6HTV


KH6HTV


KH6HTV


Roland Hoffman - KC6JPG
Net Control - Amateur Television Network


W6CX
CH1
K6SOE
K6SOE-PITTSBURG


W6CX
W6ASU


VK3GE
Geoff in Toolern Vale, Victoria, Australia


VK3CSJ - Clint
Narre Warren South


14:15:08 RTS Sydney
Live ATV from VK2


VK5KJG - Whyalla
DVB-T 1:53 PM
VK5KJG


WB6HYH
TOM
Rancho Cucamonga


Gary

AUDIO DRAMAS

The Annual DATV QSO Party was another good session, despite technical issues. The main issue is audio. Audio varies, drops out, gets incorrectly routed or switched, feedback or echoing or scratchy.
Given all the linking involved it is not really a surprise. Video seems to be more reliable.

VK3CH DRAMAS

I even had my own dramas and it was audio, no audio transmitted on my pre-recorded video, despite working perfectly a few days prior.
So I ended up having a portable dome camera around the shack and narrated on the go.
Camera audio works fine; once you involve a computer then things can get tricky.
I still deal with composite video; HDMI audio conversion brings more switching issues.
I thought I had these all sorted. Only on the day of the ATV QSO Party does it decide to fail.
In future I will use direct audio via leads, no more software controlled audio, it just seems to work most of the time, only to fail on the important day and I have been bitten for the last time. [Famous last words…]

THANKS TO PETER COSSINS

Peter was the main co-ordinator and VK anchor, with assistance from Neil VK3BCU. He looked pretty tired after the final ATV QSO on Saturday, it was quite a marathon. Another round of lessons learned with linking and all the patching. VK3RTV functioned perfectly in full DVB-T2 HD.
Next year will be the 10th Annual DATV QSO Party, I wonder what we can do collectively and individually to make it even better.

~Mick VK3CH

Arduino Yaesu G-800DXA Controller Modification.
By Frank Scott VK2BFC.

The Arduino Nano can be used for a myriad of applications from turning things on and off to displaying the current temperature. One such application is the interfacing of the Yaesu G-800DXA Rotator Controller to the popular Ham Radio Software "Ham Radio Deluxe" or HRD.

Whilst you can get an interface cable which supposedly allows HRD to control the rotator, this appears to be flaky at best. So, a solution using a simple **Arduino Nano**, an **ADS 1115** 16bit ADC Board, 2 relays and a few parts from the junk box was found.

The design for this interface came from a great ARRL book "*More Arduino Projects for Ham Radio*" which I highly recommend if you're at all interested in designing with the Arduino.

The design in the book is for a Yaesu G-800SA Controller and so some changes to the original design were needed to implement it for use on a G-800DXA. In particular the board and relays for the modification could not be installed inside the Controller, but instead were mounted in a small jiffy box from Jaycar and connected to the Controller using 6 core alarm cable terminated with a 6 Pin DIN Plug.

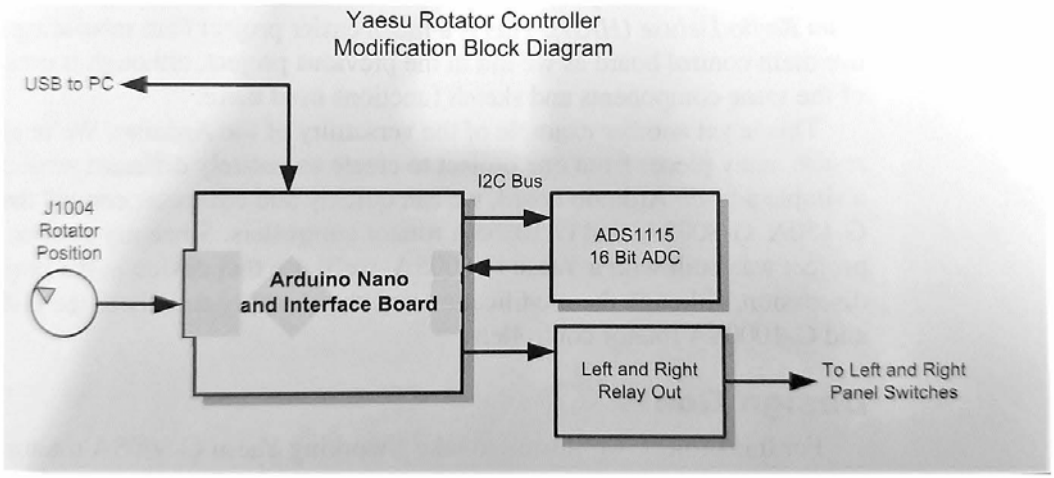


Figure 1 -- The block diagram of the Yaesu Rotator Controller modification

Figure 1 shows the block diagram for the modified G-800DXA rotator controller. Since we start out with a functional rotator control box this is a relatively simple project. We'll build a small interface board with an Arduino Nano to interface with the existing antenna rotator position sensor and the control box front panel switches. A Texas Instruments ADS1115 16bit A/D converter will be used to read the antenna rotator position sensor. Since this design is to be interfaced with a workstation for computer control, we'll power the add-on board and rotator control relays using power from the Nano's USB Serial port.

Figure 2 shows the flowchart for the project. We'll start out by including the libraries we'll need, then define the I/O pins, the EEPROM data format, and the default calibration values. Next, we'll declare and initialize the variables needed in the sketch, and then create (instantiate) the A/D converter object.

In the **setup()** loop, we'll set the pin modes for the digital I/O pins we use in the project. Then we'll turn off the rotation control relays to make sure all computer-controlled rotation is stopped until we're ready. Next, we'll initialize the A/D converter module and read the calibration data from the Nano's onboard EEPROM.

In the **main loop()** , we'll check to see if a computer control command has been received on the Nano's USB serial port. Note that we don't have to keep track of any manual rotation operations

since that part of the control box is already functioning correctly. All we have to do with this sketch is respond based on the incoming commands received on the Nano's USB serial port.

If we receive a rotate command, we'll energize the correct motor relay which is in parallel with the appropriate front panel switch, and rotate and the commanded direction or to the heading specified in the rotate command.

If we receive a stop command, we'll de-energize the motor control relays, and stop computer-controlled antenna rotation.

If we receive a calibration command, we'll read the current antenna rotator position, and update the calibration data before saving it to the Nano's onboard EEPROM.

If we receive an antenna position request, we'll calculate the current antenna rotator position and send the position back to the workstation in the Yaesu GS-232A format.

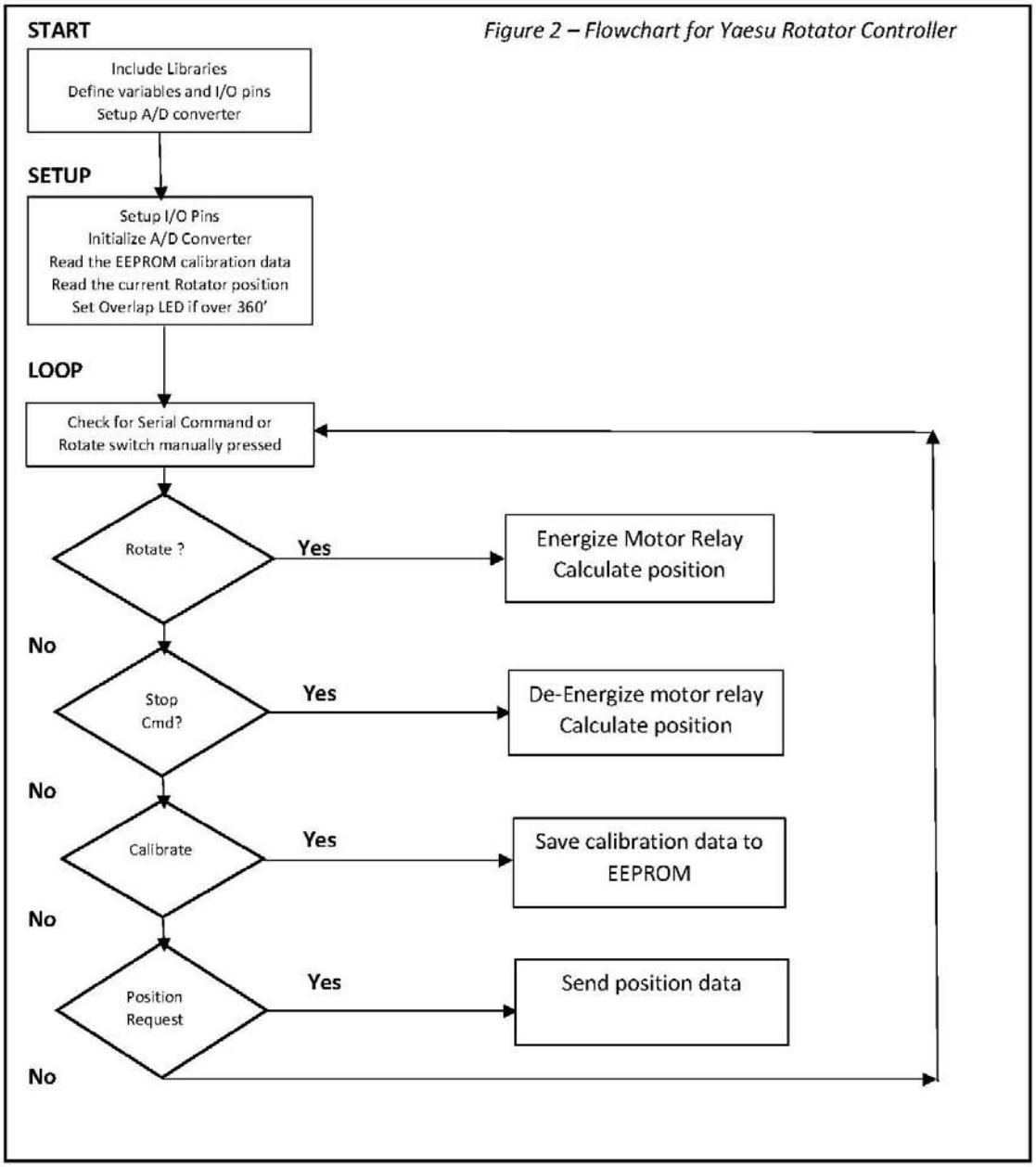
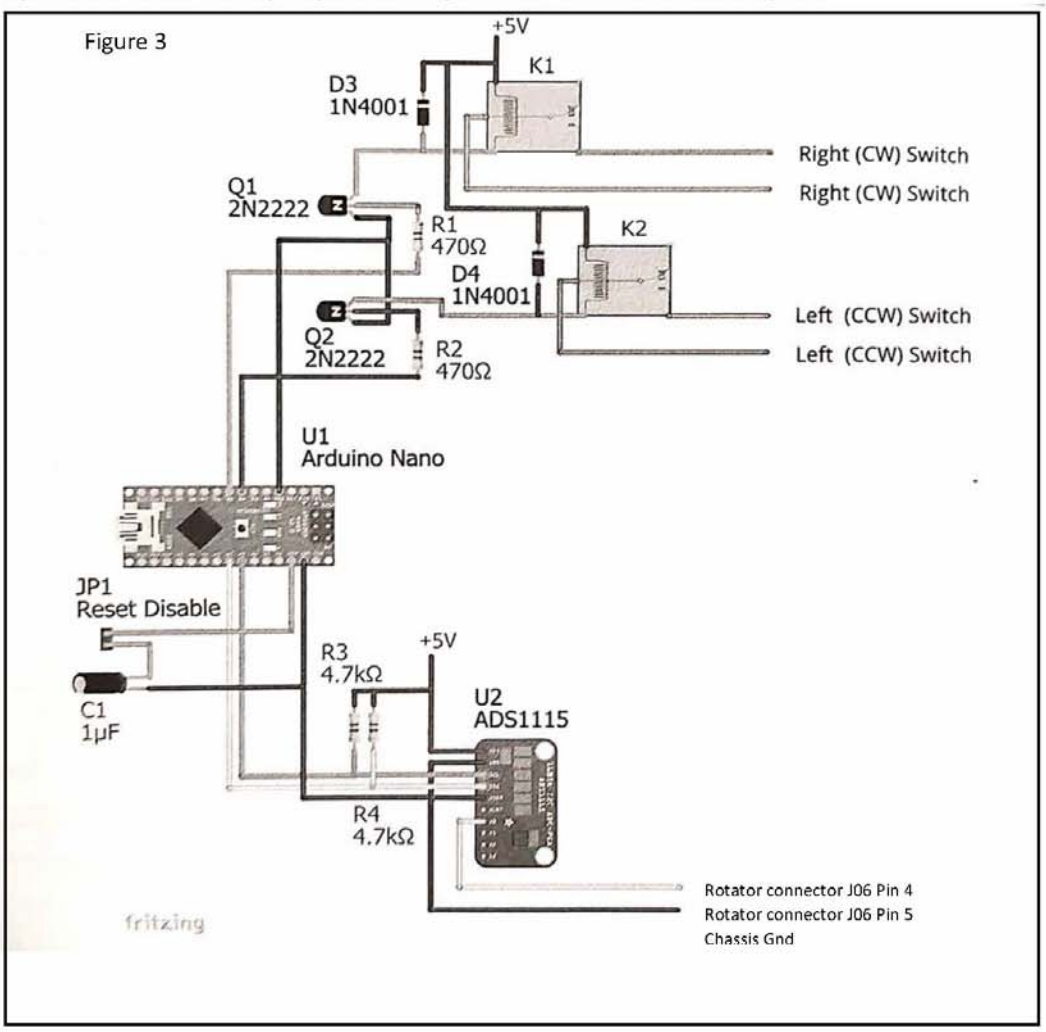
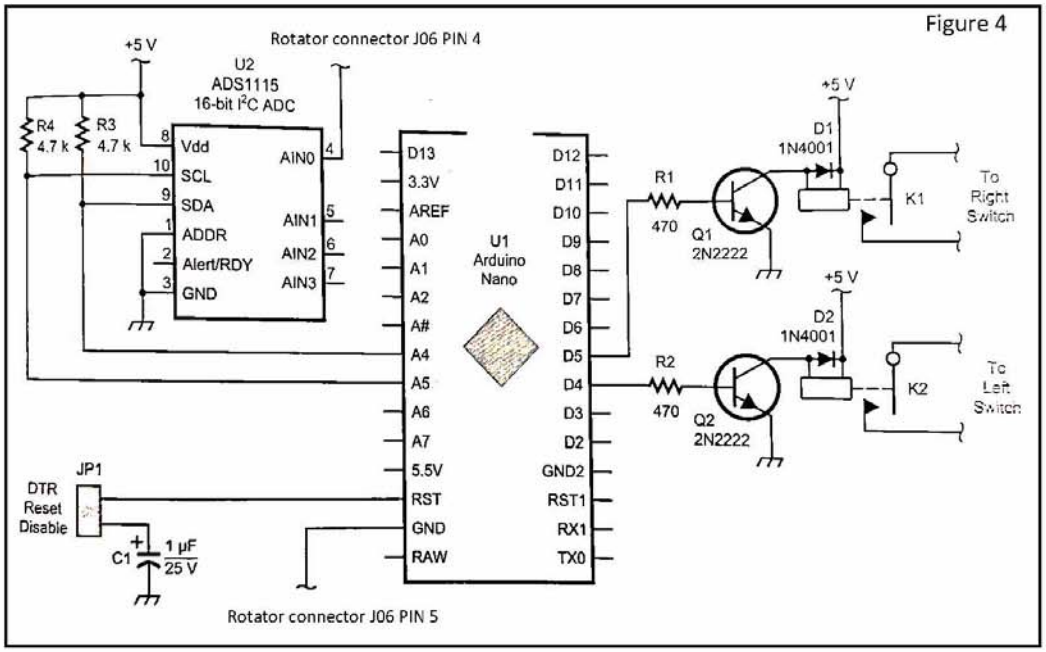


Figure 2 – Flowchart for Yaesu Rotator Controller

Figure 3 shows the Fritzing diagram, and Figure 4 shows the schematic diagram.





The Arduino Nano is mounted using a pair of 15 pin headers to a piece of Veroboard. The antenna rotator position sensor is connected to the ADS 1115 A/D by splicing it into the position sensor input on **J06 pin 4** that connects to the Yaesu main control board, we get the ground for the A/D input and the add-on board from **J06 pin 5**. For this design we will use 5v Relays mounted external to the Veroboard and connected using hook-up wire. The relay contacts are connected across each of the front panel ROTATE switches on the Yaesu controller. This switch can be a problem to remove and then connect these wires so longer wires replaced the originals to the gnd lines of the switches. The wires from the switches and the position sensor lines are connected to a 6Pin DIN plug for ease of use. We'll use a reset disable switch to the NANO's RESET line to allow us to switch between programming and HRD interface mode.

The sketch for this project can be downloaded from www.arrl.org/arduino2
Select the Chapter 18 — **Yaesu Rotator Controller Modification** file for download.

You may also need to install the ADS1115 and I2Cdev Libraries into your Arduino software before compiling.

The following pictures show the various stages of completion to give an idea of the way it was constructed.

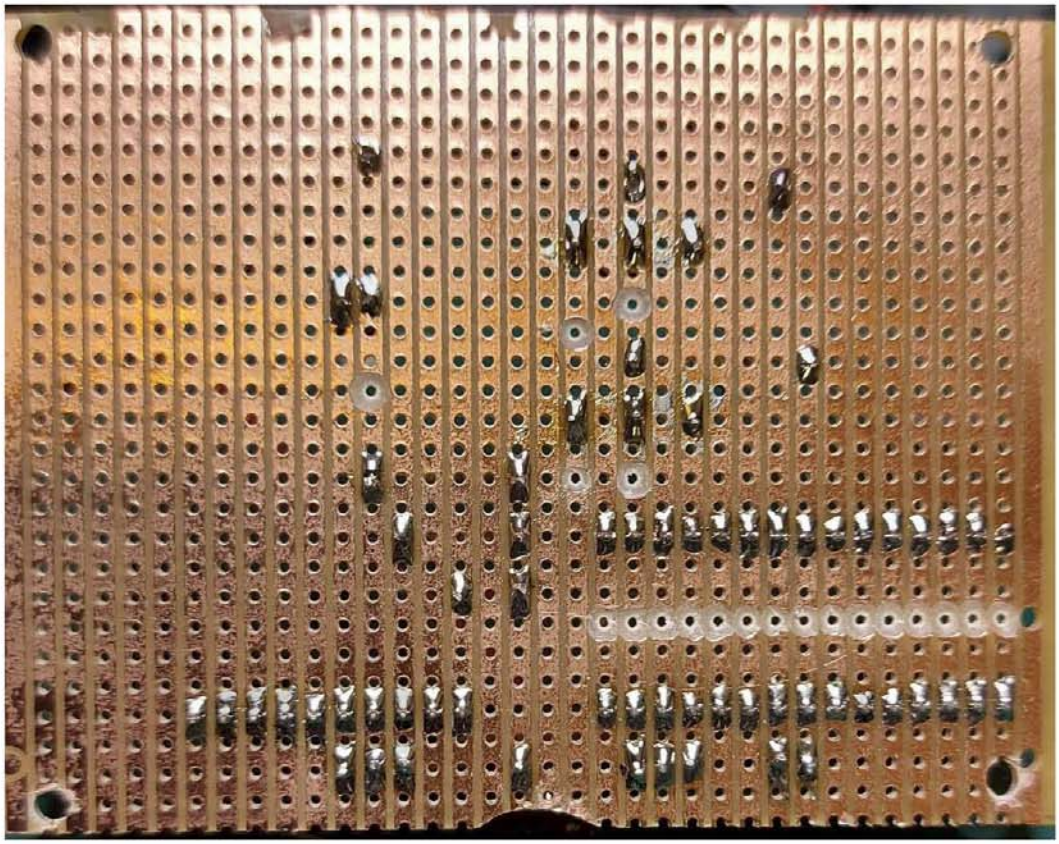


Fig 5 Rear of Veroboard showing location of nano and ADS115 board

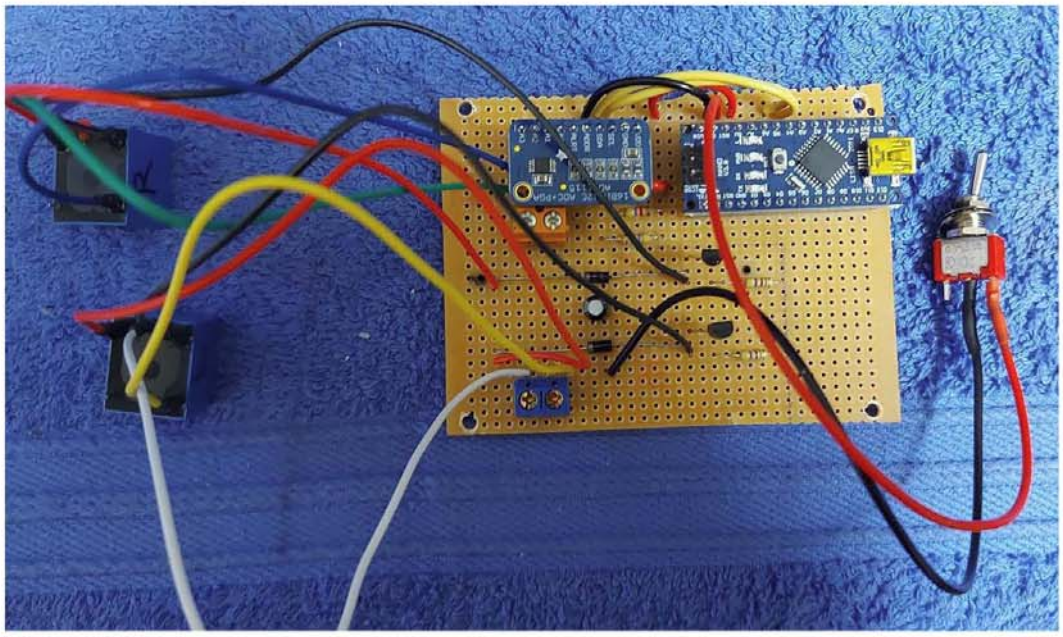


Fig 6 The board populated prior to mounting in suitable case. Note the relay connections.

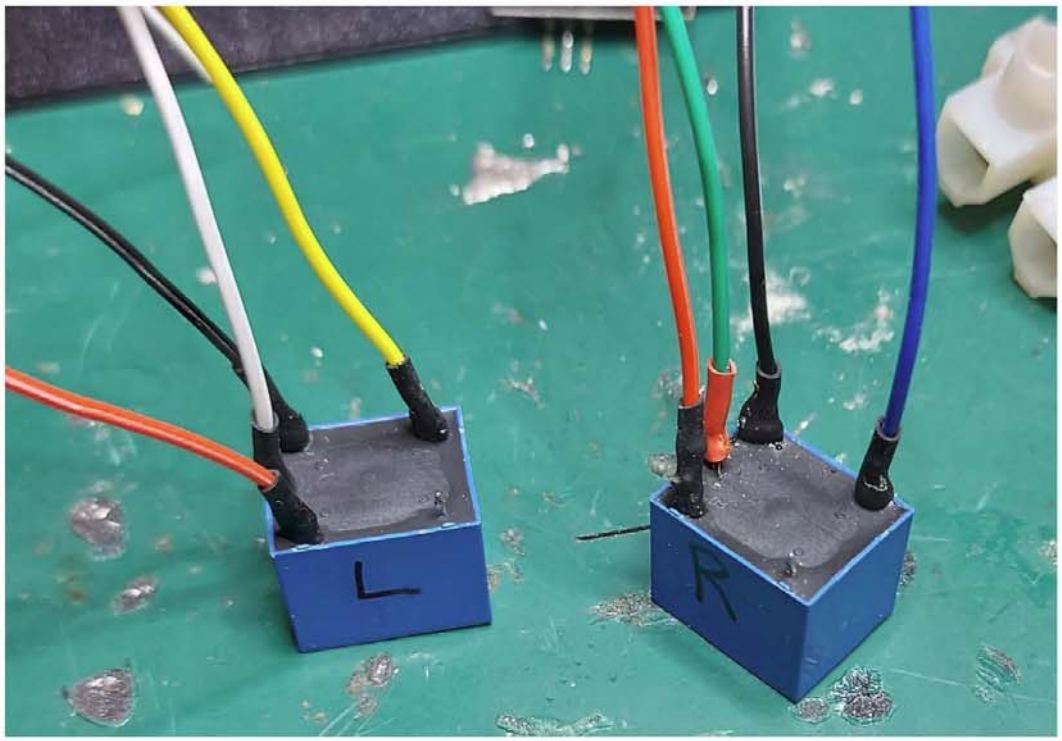


Fig 7 Relays wired ready for connection to Veroboard. Color coding the leads makes it easier to connect without making mistakes.

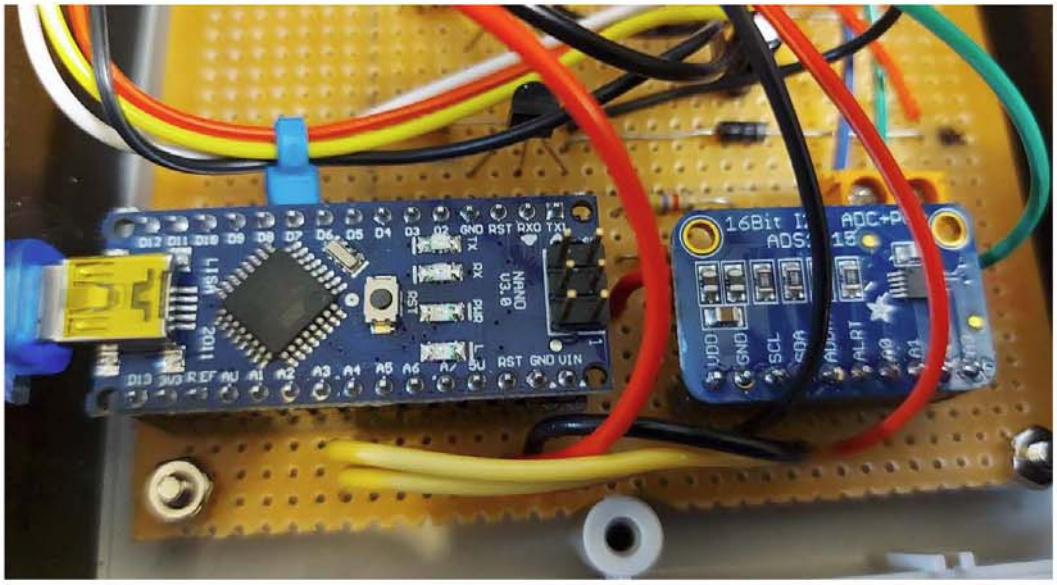


Fig 8 Arduino Nano and ADS1115 mounted on headers. Note the Nano is positioned close to the edge of the board to allow ease of connection by a USB lead.

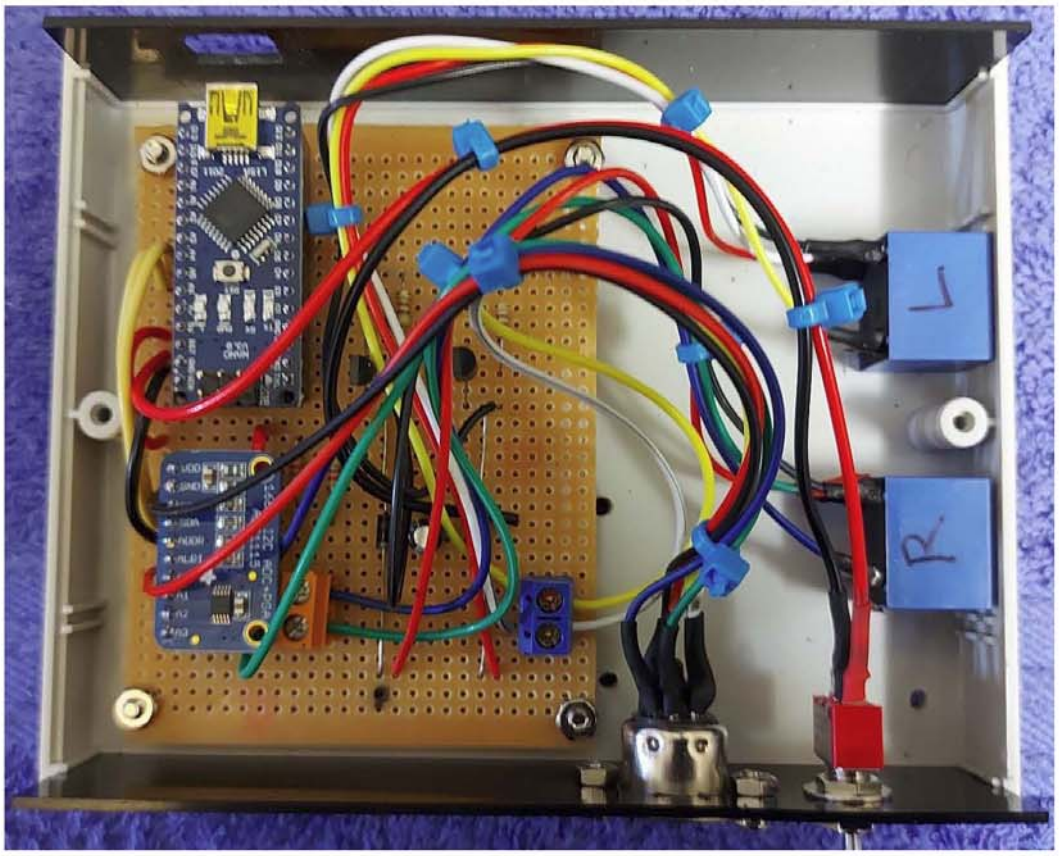


Fig 9 Completed interface mounted in jiffy box. Note the 6Pin DIN Socket for connection to the rotator controller. The relays are held in place with double sided tape. Marking them L & R makes it easy not to make mistakes when connecting them.

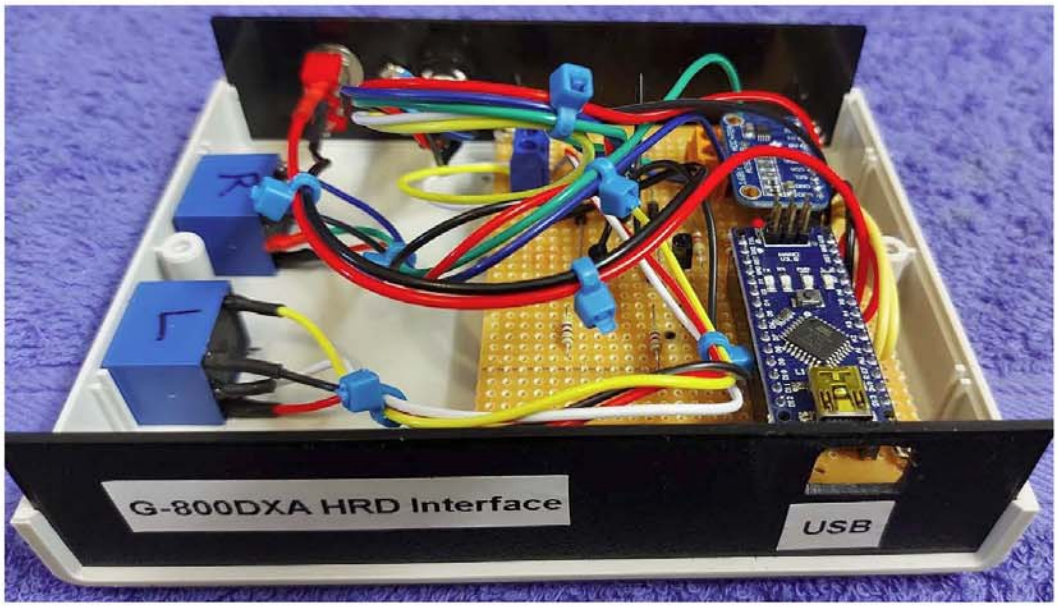


Fig 10 Completed G-800DXA HRD Interface.

Calibrating the interface

To calibrate your Yaesu interface, first rotate the antenna rotator manually to 0', then using the Arduino IDE's serial monitor, send an "0" command to set the zero-calibration point.
Next rotate the antenna rotator to 90' and send an "F1" command (CASE IS IMPORTANT F1 NOT f1).
Next rotate to 180'and send an "F2" command.
Then rotate to 270'and send the "F3" command, then to 360'and send the "F4" command.
Finally, rotate to 450'and send the "F" command.
Calibration is now complete.

Sourcing components

Most of the components used in the project were sourced from my local Jaycar store. The relays were removed from Arduino 5v relay modules which were found not to be suitable to use in their original form. The relays can be a problem to remove but a good supply of GoopWick or SoderWick will do the job. The Arduino Nano and ADS1115 boards were sourced from Core Electronics in Sydney.

References

ARRL – More Arduino Ham Radio Projects – Chapter 18
Ham Radio Deluxe – www.hrdsoftwarellc.com
Texas Instruments --- www.ti.com
Yaesu --- www.yaesu.com
Core Electronics --- www.core-electronics.com.au
Jaycar --- www.jaycar.com.au

I hope you find this both interesting and informative and give the project a go. It can be modified for a variety of rotator controllers to allow them to be controlled by HRD.
Frank Scott – VK2BFC

FREE PHONE CALLS

Local, national and calls to mobiles will now be free from Telstra payphones, since last month.
Future generations may never know the thrill of making a reverse-charges call to their parents after Telstra made its 15,000 payphones free.

Key points:

Telstra says 11 million calls are made from its payphones each year
Calls to local and national numbers, and mobile phones will no longer require money
As part of the telephone payphone overhaul, both local and domestic calls are free, and calls to Australian mobile numbers are unlimited except for the 6-hour call limit.
However, consumers still have to pay to make a call abroad.

The Salvation Army says the move will be a "game changer" for vulnerable people
The Telco announced today local or national calls to a fixed line or Australian mobile from a Telstra payphone would no longer incur a charge.

The move means the days of scrambling for 50 cents in change, or devising a code involving a predetermined number of rings were effectively over.
The company said around 11 million calls were made from its payphones last year, including 230,000 calls to critical services such as 000 and Lifeline.

Telstra CEO Andy Penn said the move to make every payphone free would cost the company around $5 million a year. "Just watching over the last 18 months how they've played a role in emergency situations through the bushfires in keeping people connected and particularly those that are vulnerable and disadvantaged, I just thought we've got to a point where we can make this free," he said. "It's not a big deal for Telstra.
It just means people don't have to worry about having a pocketful of coins if they need to make a phone call in an emergency."

Mr Penn said Telstra had no plans to remove any of the payphones, and the number of phones the company maintained was determined by the federal government.

The phones have previously been made free to communities affected by natural disasters, or in remote indigenous communities.

Telstra has also offered free Christmas and New Year calls from its payphones for the past five years.

Salvation Army Major Brendan Nottle said it was a "game changer" for people who couldn't afford a mobile phone, or have had to leave dangerous domestic situations.

"Many vulnerable Australians don't have access to a mobile phone so it's really important for them to break down that sense of social poverty, social isolation to connect with a friend, or to connect with a service," he said.

Finding a payphone near you will be the next challenge! *~Internet*

MY MIND IS LIKE MY INTERNET BROWSER
19 tabs open, 3 of them are frozen and I have no idea where the music is coming from

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NEVARC News
The club magazine
All it needs is YOU
Send stories of your radio news to the editor
What have you been up to in these strange days of COVID?
magazine@nevarc.org.au

NEVARC Net

40 Meter Net

7 Days a Week

10am Local time

(East coast)

7.097 MHz LSB

Approximately + or – QRM

Hosted by Ron VK3AHR

"Australia Ham Radio 40 Meter Net"

President, VK2VU, Gary
Vice President, Tom VK3NXT
Secretary, VK2FKLR, Kathleen
Treasurer, Amy

WIA Affiliated Club

The Radio Amateur Society of Australia

NEVARC
North East Victoria Amateur Radio Club

NEVARC CLUB PROFILE

History

The North East Victoria Amateur Radio Club (NEVARC) formed in 2014.
As of the 7th August 2014, Incorporated, Registered Incorporation number A0061589C.
NEVARC is an affiliated club of the Wireless Institute of Australia and The Radio Amateur Society of Australia Inc.

Meetings

Meetings details are on the club website, the Second Sunday of every month, check for latest scheduled details.
Meetings held at the Belviour Guides Hall, 6 Silva Drive West Wodonga.
Meetings commence with a BBQ (with a donation tin for meat) at 12pm with meeting afterwards.
Members are encouraged to turn up a little earlier for clubroom maintenance.
Call in Via VK3RWO, 146.975, 123 Hz tone.

VK3ANE NETS

HF

7.097 MHz	7 Days a Week - 10am Local time
3.622 MHz	Wednesday - 8.30pm Local time

Benefits

To provide the opportunity for Amateur Radio Operators and Short Wave Listeners to enhance their hobby through interaction with other Amateur Radio Operators and Short Wave Listeners. Free technology and related presentations, sponsored construction activities, discounted (and sometimes free) equipment, network of likeminded radio and electronics enthusiasts. Excellent club facilities and environment, ample car parking.

Website: www.nevarc.org.au

Facebook: www.facebook.com/nevicARC/

Postal: **NEVARC Secretary**
PO Box 8006
Birallee Park
Wodonga Vic 3690

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This is particularly true for pre-planned outdoor activities affected by adverse weather etc.
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